

ABSTRACT

A stationary gas turbine engine includes an axial compressor; a turbine; a stationary inner barrel downstream of the compressor; a brush seal including a ring-shaped holder supported by the inner barrel, and a multiplicity of inwardly extending bristle members having an ambient temperature clearance of not less than 0.015 percent of a rotor land region diameter of the rotor under cold conditions for restricting air passage into the chamber from the compressor. The flow of cooling air from the chamber is preferably alterable by a fluid port extending through one wall of the inner barrel, the fluid port being connected to an auxiliary source of pressure air external of the inner barrel, whereby pressure air from the auxiliary source augments the flow of cooling air from the chamber. A calibrated needle valve can adjustably restrict the flow of auxiliary air for controlling a monitored operating parameter such as the temperature within the chamber. The engine can have an outer barrel surrounding the inner barrel, air flowing therebetween toward the combustor, and including a radial fluid port, and a fluid conduit connected between the passage and the fluid port, the auxiliary source being connected to the fluid port external of the outer barrel. A method for controlling cooling air flow in the power plant includes providing the brush seal; connecting the brush seal in augmenting relation to the labyrinth seal; and spacing the bristles from the land region of the rotor.

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